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Attorneys for Sonos, Inc.

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA
SAN FRANCISCO DIVISION

SONOS, INC.,

Plaintiff,

v.

GOOGLE LLC,

Defendant.

Case No. 21-cv-07559-WHA

**DECLARATION OF EVAN D. BREWER
IN SUPPORT OF SONOS, INC.'S
OPPOSITION TO GOOGLE LLC'S
MOTION TO DISMISS SONOS'S
SECOND AMENDED COMPLAINT**

Date: February 24, 2022
Time: 8:00 a.m.
Place: Courtroom 12, 9th Floor
Judge: Hon. William Alsup

Second Amnd. Complaint Filed: 02/23/2021

1 I, Evan D. Brewer, declare as follows and would so testify under oath if called upon to do
2 so:

3 1. I am an attorney with the law firm of Orrick, Herrington & Sutcliffe LLP, counsel
4 of record to Sonos, Inc. (“Sonos”) in the above-captioned matter. I am a member in good standing
5 of the Bar of the State of California. I make this declaration based on my personal knowledge,
6 unless otherwise noted. If called, I can and will testify competently to the matters set forth herein.

7 2. I make this declaration in support of Sonos’s Opposition to Google’s Motion to
8 Dismiss the Second Amended Complaint.

9 3. Attached hereto as **Exhibit A** is a true and correct excerpted copy of an email and
10 attachment sent by Mark Triplett of Sonos to John LaBarre and Allen Lo of Google on October
11 13, 2016, attaching a document titled “Sonos: Overview of Selected Sonos Patent Assets Relevant
12 to Google October 2016.”

13 4. Attached hereto as **Exhibit B** is a true and correct excerpted copy of an email and
14 attachment sent by Willy Chen of Sonos to Matthew Gubiotti of Google on January 31, 2018,
15 attaching a document titled “Sonos and Google with Google Home Max Analysis.”

16 5. Attached hereto as **Exhibit C** is a true and correct copy of Sonos’s Claim Chart for
17 U.S. Patent No. 9,654,821, sent by Sonos to Google on February 22, 2019 as part of a set of 100
18 claim charts.

19 6. Attached hereto as **Exhibit D** is a true and correct excerpted copy of an email and
20 attachment sent by Alaina Kwasizur of Sonos to Tim Kowalski and Bradley Riel of Google on
21 June 13, 2019, attaching a document titled “Sonos-Google IP License Discussion June 11, 2019.”

22 I declare under penalty of perjury that the foregoing is true and correct to the best of my
23 knowledge. Executed this 24th day of January, 2022 in Mercer Island, Washington.

24
25 

26 _____
EVAN D. BREWER

EXHIBIT A

To: John LaBarre[jlabarre@google.com]; Allen Lo[alo@google.com]; Isorell@google.com[Isorell@google.com]
Cc: Tom Cullen[Tom.Cullen@sonos.com]; Alaina Kwasizur[Alaina.Kwasizur@sonos.com]; Craig Shelburne[Craig.Shelburne@sonos.com]
From: Mark Triplett[/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=694E76097D884EE989D4D92F32BBE9B4-MARK TRIPLETT]
Sent: Thur 10/13/2016 2:39:48 PM Eastern Standard Time
Subject: RE: Sonos Meeting Follow Up
Attachment: Google Education Material 10_13_06.pdf

Hi John and Lou,

Attached is the other round of educational material that I mentioned in my email below. I apologize for not sending it last week. It should be helpful to better understand how certain Sonos patents relate to Google.

Also, please confirm our meeting on Tuesday, the 25th in sunny Santa Barbara and suggest a time that works best for you and Lou.

My Best,
Mark

From: Mark Triplett
Sent: Thursday, October 06, 2016 10:51 AM
To: 'John LaBarre'; Allen Lo; Isorell@google.com
Cc: Tom Cullen; Alaina Kwasizur; Craig Shelburne
Subject: RE: Sonos Meeting Follow Up

Okay – sounds good John. It's fine if you can't get me the list beforehand...we should meet either way. So, let's plan on Tuesday, the 25th in Santa Barbara. See you soon.
-mark

From: John LaBarre [mailto:jlabarre@google.com]
Sent: Wednesday, October 05, 2016 5:52 PM
To: Mark Triplett; Allen Lo; Isorell@google.com
Cc: Tom Cullen; Alaina Kwasizur; Craig Shelburne
Subject: Re: Sonos Meeting Follow Up

Thanks for the note, Mark. Let me confer with Lou, but I think we can make Tuesday work.

We are working towards providing you a preliminary list of relevant Google patents and was planning on providing that list to you at the meeting (or perhaps a few days in advance). If that doesn't suit your needs, we can commit to providing you the list that week, and then we could have our follow-up meeting at some later point (e.g., two-three weeks after that).

Please just let me know your preference (i.e., work towards a meeting on the 25th with us providing you our list on the 21st OR provide you our list on the 21st and set up a meeting for sometime in November).

Best,

John

On Wed, Oct 5, 2016 at 3:00 PM Mark Triplett <Mark.Triplett@sonos.com> wrote:
Hi John,

Thanks for the note. I happen to be in SB the week of the 24th. How about either Tuesday or Wednesday? Tuesday is probably best for me. If those days don't work, then please propose another day/time that week and I can rearrange flights.

Your last note mentioned looking to the relevancy of Google's patent portfolio to Sonos's line of business. If you have any Google patents to discuss, I'd kindly ask for the list and their relevance to Sonos products this week so that we can be prepared at some level to discuss them.

We will be sending another round of educational material this week. It should help connect the Sonos patents to more specific features of the Google products.

Thanks,
Mark

From: John LaBarre [mailto:jlabarre@google.com]
Sent: Tuesday, October 04, 2016 1:53 PM
To: Mark Triplett; Allen Lo; Isorell@google.com

Cc: Tom Cullen; Alaina Kwasizur; Craig Shelburne
Subject: Re: Sonos Meeting Follow Up

Hi Mark -

I wanted to reach back out to you regarding setting up a time for our meeting. Perhaps the week of October 24th or the week of November 7 (during the intervening week, Lou is overseas on business) works for you? My suggestion is that I could join in person (Santa Barbara?) and that Lou could join via video conference. We are, of course, open to other suggestions as well.

Let us know what works for you.

Best,

John

On Fri, Sep 2, 2016 at 5:46 PM John LaBarre <jlabarre@google.com> wrote:
[+Louis Sorell](#)

Thanks, Mark. I've added Lou to the thread.

As for a next meeting, the week of the 19th will, unfortunately, not work (at least for me) as I will be attending a conference overseas that week.

In addition, I feel that at our next meeting, we should be in a position to discuss with you in reciprocal detail our thoughts on the relevancy of Google's patent portfolio to Sonos's lines of business. Based on our conversation this week, we are preparing to undertake such an assessment, but probably will need several weeks before we will even be in a initial place to have such discussions.

I will confer with Lou and propose alternative dates next week.

Regards,

John

On Fri, Sep 2, 2016 at 5:25 PM Mark Triplett <Mark.Triplett@sonos.com> wrote:
Hi all,

Thanks again for meeting on Wednesday. I appreciate your willingness to understand what Sonos has invented and protected over the years, and how that IP is relevant to Google. Pursuant to your request, my team and I will prepare material to educate Lou and/or John (I don't have Lou's email, so please forward to him) at a level between what I presented at the meeting and claim charts. We can also show the top 20 most interesting prior art references, if that's of interest to you. I and a member from my team will be able to walk you through that material the week of September 19th.

Please let me know what days/times work best and I can calendar the time. In the meantime, you have my 3 overview slides and I further included a document that specifically lists:

- (1) 16 patents (directly relevant today)
- (2) 4 allowed patent applications (directly relevant today)
- (3) 8 other patent specifications that those folks close to Cast should readily understand the relevance by reading the overview sections at a minimum.

Again, we seek to reach a licensing agreement with Google for the Sonos portfolio of utility patents. My team works hard to maximize the value of each of our patents and the value is evidenced by our finding that over 50% of them are practiced today. To drive the continued value of our patents, we interview every case with the Patent Office and we are interested in always learning. If you have something to share with us about any particular patent(s) as it relates to Google, we are all ears. We keep the patent families alive to ensure over time that we accurately and precisely protect all the patentable innovations brought to this world by Sonos.

To reiterate, I don't view any of this information as confidential – I value a transparent and open approach to our continued work together.

Enjoy a nice, long weekend in observance of the Labor Day holiday!

My Best,
Mark

Mark Triplett
Sonos Intellectual Property | [630.297.9099](tel:630.297.9099) | mark.triplett@sonos.com

--

John LaBarre | Patent Transactions | Google Inc. | [917-971-5593](tel:917-971-5593)

PRIVILEGE AND CONFIDENTIALITY NOTICE: If you received this communication by mistake, please don't forward it to anyone else (it may contain confidential or privileged information), please erase all copies of it, including all attachments, and please let the sender know it went to the wrong person.
Thanks.

--

John LaBarre | Patent Transactions | Google Inc. | [917-971-5593](tel:917-971-5593)

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John LaBarre | Patent Transactions | Google Inc. | 917-971-5593

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Senior Counsel / Registered In-House Counsel (CA) / Licensed in New York

SONOS

Overview of Selected Sonos Patent Assets Relevant to Google

October 2016

FOR DISCUSSION PURPOSES ONLY – SUBJECT TO FRE 408

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2.....	Summary of Relevant Google Features
4.....	Chromecast Audio Dongle
10.....	Google Cast Application
16.....	Google Play Music Application
20.....	Google Cast SDK, Partner Speakers and Applications

Appendix A Index According to Example Google Product

“For years, Sonos has been synonymous with the concept of multi-room audio, so much so that it’s almost hard to know which came first. At the very least, Sonos spotted a trend long before its competitors – at most, it’s responsible for making the market what it is today.” - What Hi-Fi

Summary of Relevant Google Features

The table below identifies patents and allowed patent applications containing claims that are believed to be relevant to one or more Google products.

Sonos notes that the identified patents and patent applications may also be relevant to other existing and/or future Google products that incorporate similar features and/or functionality, including but not limited to, e.g., Google Pixel.

Google Feature	Patent or Allowed Application	Relevant Google Products
Audio Distribution Between Devices Playback device distributes audio to another playback device.	9,213,357; 9,189,011	<ul style="list-style-type: none"> Google Chromecast Audio Dongle devices Google Home Google Cast SDK and Google Cast Speaker Product devices
Synchronization of Playback Between Devices Synchronize playback of the same audio between playback devices.	8,938,637; 8,370,678; 8,689,036; 9,348,354	<ul style="list-style-type: none"> Google Chromecast Audio Dongle devices Google Home Google Cast SDK and Google Speaker Product devices
Group Formation of Devices Dynamically form groups of multiple playback devices.	9,182,777; 9,288,596; 9,164,532; 9,218,017 *14/041,989	<ul style="list-style-type: none"> Google Chromecast Audio Dongle devices Google Home Google Cast SDK and Google Cast Speaker Product devices Google Cast Application Google Android Devices with Cast and/or Play Applications
Group Maintenance/Status Information The playback system (including a controller device) is aware of the playback devices and groups of playback devices within the playback system.	9,195,258; 9,207,905; 9,170,600; 9,213,356; 9,348,824	<ul style="list-style-type: none"> Google Chromecast Audio Dongle devices Google Home Google Cast SDK and Google Cast Speaker Product devices Google Cast Application Google Play Music Application Google Android Devices with Cast and/or Play Applications
Group Volume Control Control the volume level of playback devices and groups of playback devices within the playback system.	8,588,949 ¹ ; 7,571,014	<ul style="list-style-type: none"> Google Cast SDK and Google Cast Partner Control Applications Google Cast Application Google Play Music Application Google Android Devices with Cast and/or Play Applications
Setup Using Inaudible Tones Use inaudible tones to set up and provide access to control playback devices (e.g., quick guest access).	8,930,005 *14/558,944 *14/679,815	<ul style="list-style-type: none"> Google Chromecast Audio Dongle devices Google Cast SDK and Google Cast Partner Control Applications Google Cast Application

¹ Reexamination Certificate issued Nov. 5, 2015. Reexamination Request No. 90/013,423.

		<ul style="list-style-type: none"> • Google Play Music Application • Google Android Devices with Cast and/or Play Applications
Fault Tolerance A playback device goes offline (e.g., lose power) and returns online (e.g., gain power) and returns to its original playback state.	*14/521,682	<ul style="list-style-type: none"> • Google Chromecast Audio Dongle devices • Google Home • Google Cast SDK and Google Cast Speaker Product devices
Playback Transfer Transfer playback of a song from a music service application (e.g., Google Play) to a playback device (e.g., Google Chromecast Audio Dongle device).	*14/520,566	<ul style="list-style-type: none"> • Google Cast SDK and Google Cast Partner Control Applications • Google Cast Application • Google Play Music Application • Google YouTube Application • Google YT Music Application • Google Android Devices with Cast and/or Play Applications
Silent Connect Automatically reconnect a controller application to control a playback device (e.g., Google Chromecast device) upon returning to the proximity of the playback device.	*13/904,949	<ul style="list-style-type: none"> • Google Cast SDK and Google Cast Partner Control Applications • Google YouTube Application • Google YT Music Application • Google Android Devices with YouTube and/or YT Music Applications
Additional Selected/Representative Patents Relevant to Cast Partner Speaker Product "Vertical" Features Various selected "vertical" playback system features including, e.g., stereo pair, line-in processing, establishing a secure wireless network, instantiation of zone scenes (including alarms), and cloud-based queues that are believed to be practiced by Google Cast Speaker Product devices and/or Google.	9,219,959 ² ; 9,202,509; 8,938,312; 8,483,853	<ul style="list-style-type: none"> • Google Cast SDK and Google Cast Speaker Product devices











*Allowed claims

² Order Granting Request for Ex Parte Reexamination entered in Reexamination Request No. 90/013,756.

Google Cast SDK, Partner Speakers and Applications

Find speakers with Google Cast

Select Google Cast speakers from any of our partners below:

				
 COMING SOON	 COMING SOON	 COMING SOON	 COMING SOON	

Google Cast SDK, Partner Speakers and Applications

1. Audio Distribution Between Devices



Sonos Website, 2004

Customize Your Home Audio

Customize your home audio experience with Multi-Room Mode. Synchronize your different Music Flow speakers to play the same music or family members can choose their own music in separate rooms.



LG MusicFlow with Cast, 2016

The following **2 patents** include claims relevant to the distribution of audio between Google Partner Speaker devices implementing the Google Cast SDK.

- Pat. No. 9,213,357
- Pat. No. 9,189,011

2. Synchronization of Playback Between Devices

With a Sonos™ Digital Music System you can:

- Simultaneously play the same song or different songs in as many rooms as you'd like — up to 32.
- Easily access your entire digital music collection with a full-color LCD screen and scroll wheel.
- Wirelessly control all your music and all your rooms—from anywhere with Sonosnet™.
- Enjoy great sound in every room.



Sonos Website, 2004

Multi-Room Pairing.

Connect multiple VIZIO SmartCast™ Speakers and Sound Bars over Wi-Fi to fill your entire home with music. Pair speakers throughout the house to play them all in unison, or play different songs in different rooms.



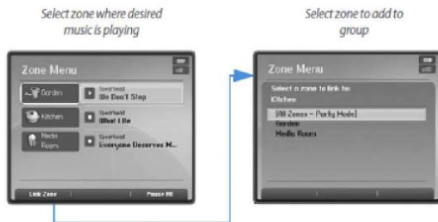
Vizio SmartCast with Cast, 2016

The following **4 patents** include patent claims relevant to synchronization of playback between Google Partner Speaker devices implementing the Google Cast SDK.

- Pat. No. 9,938,637
- Pat. No. 8,370,678
- Pat. No. 8,689,036
- Pat. No. 9,348,354

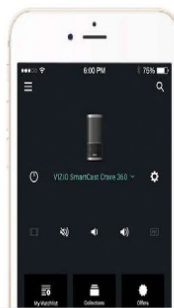
3. Group Formation of Devices

To add a zone to a zone group
1. Touch the Zones button on your Controller.



Sonos User Guide, 2005

Turn Your Phone Into The Ultimate Remote.



Download the VIZIO SmartCast App for free on the App Store and Google Play. Easily set up and control your multi-room speaker like never before.



Vizio SmartCast with Cast, 2016

The following **1 patent** includes patent claims relevant to group formation of Google Partner Speaker devices implementing the Google Cast SDK.

- Pat. No. 9,182,777

The following **1 patent** includes patent claims relevant to group formation of Google Partner Speaker devices implementing the Google Cast SDK, including specifically the election of a master device for the group.

- Pat. No. 9,288,596

The following **2 patents** include patent claims relevant to the creation of groups using Google Partner Speaker applications implementing the Google Cast SDK.

*Some claim limitations may be additionally and/or alternatively relevant to the Google Cast application.

- Pat. No. 9,164,532
- Pat. No. 9,218,017

The following **1 additional disclosure** includes disclosure and/or patent claims believed to be relevant to group formation of Google Partner Speaker devices implementing the Google Cast SDK, including specifically the election of a master device for the group.

- App. No. 14/041,989

4. Group Maintenance/Status Information



Touch the Zones button to view the music playing in each room

Sonos User Guide, 2005

Turn Your Phone Into The Ultimate Remote.



Download the VIZIO SmartCast App for free on the App Store and Google Play. Easily set up and control your multi-room speaker like never before.



Vizio SmartCast with Cast, 2016

The following **4 patents** include patent claims relevant to the maintenance of and status of groups of Google Partner Speaker devices implementing the Google Cast SDK.

- Pat. No. 9,195,258
- Pat. No. 9,207,905
- Pat. No. 9,170,600
- Pat. No. 9,213,356

The following **1 patent** includes patent claims relevant to the maintenance of and status of groups of Google Partner Speaker devices implementing the Google Cast SDK, including identification of particular devices according to group identification.

- Pat. No. 9,348,824

5. Setup Over WiFi

1-2-3 Setup

It takes just 3 steps to get your Sonos Digital Music System up and running:

- 1 Connect speakers to your ZonePlayer
- 2 Connect the first Sonos ZonePlayer (with Ethernet cable supplied) to your home network
- 3 Install the computer software (or use a Controller) to configure your music system

Sonos User Guide, 2005

Simple Setup

MUSIC FLOW SPEAKERS CAN BE SET UP ANYTIME FOLLOWING A TEN MINUTE SETUP. IN JUST MINUTES YOU'LL BE ENJOYING YOUR MUSIC AS NEVER BEFORE.

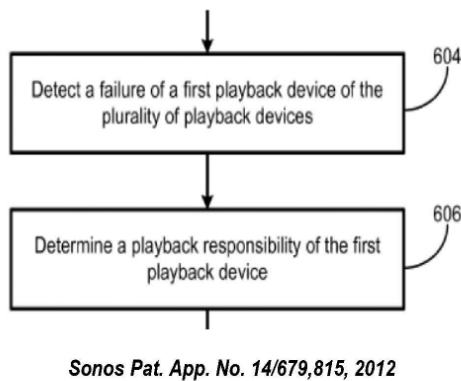


LG MusicFlow with Cast, 2016

The following **patent disclosure** includes disclosure believed to be relevant to the setup of Google Partner Speaker devices implementing the Google Cast SDK on a WiFi LAN now or in the future.

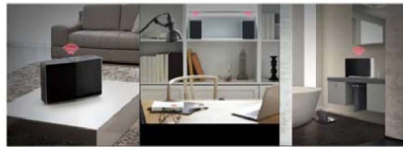
- Pat. No. 8,326,951

6. Fault Tolerance



Keep The Connection

Music Flow is designed to minimize those pesky drops in connection that interrupt your jam. LG's Mesh Network combined with Dual Band Wi-Fi technology lets you enjoy high-definition music on a more stable, seamless connection.

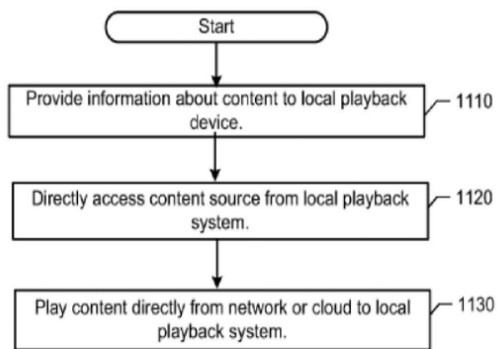


LG MusicFlow with Cast, 2016

The following **allowed patent application** includes patent claims relevant the fault tolerance of Google Partner Speaker devices implementing the Google Cast SDK, including when a given device goes offline and returns online.

- App. No. 14/679,815

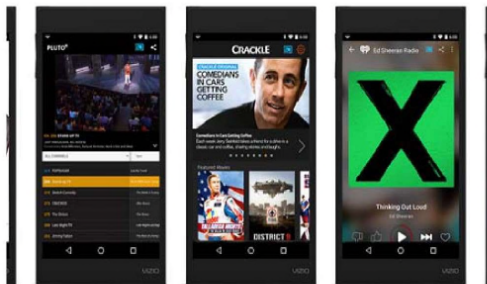
7. Playback Transfer



Sonos Pat. App. No. 14/520,566, 2011

Google Cast Cast From Apps You Already Know and Love.

All VIZIO SmartCast™ products have Google Cast™ built-in – the same technology behind Chromecast – which allows you to cast your favorite content from your phone to your TV / display or speakers.



Vizio SmartCast with Cast, 2016

The following **allowed patent application** includes patent claims relevant to the transfer of playback from Google Partner Speaker applications implementing the Google Cast SDK.

- App. No. 14/520,566

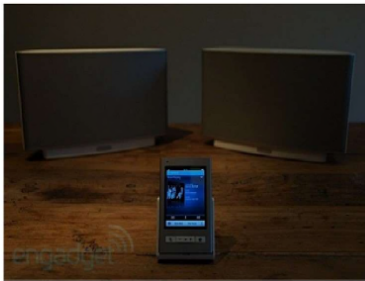
8. Stereo Pairing [EXAMPLE "VERTICAL" FEATURE]

Sonos 3.2 update and S5 stereo pairing put to the test

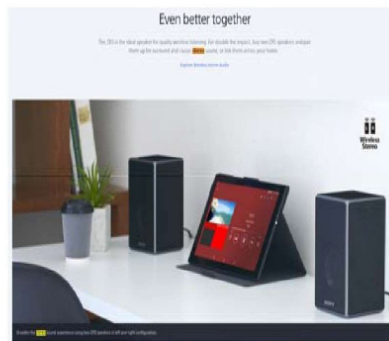
Thomas Ricker, @tricker
05.22.10

0
Shares

f | | | |



Engadget on Sonos, 2010



Sony with Cast, 2016

The following **patent disclosures** includes disclosure and/or patent claims believed to be relevant, now or in the future, to arranging, in a Stereo Pair, Google Partner Speaker devices implementing the Google Cast SDK.

- Pat. No. 9,219,959
- Pat. No. 9,202,509

9. Line-In Processing [EXAMPLE "VERTICAL" FEATURE]

Autoplay

Line-In Autoplay feature will allow you to automatically play music when a signal is being sent to the Line-In port. Connect the audio line-in cable provided with your Sonos product (or a standard RCA cable) from the Audio out connection(s) on the external source to the analog Audio In connection(s) on the back of your Sonos product. The source device will automatically be detected and displayed on the Sonos controller.

Sonos, 2012

CONNECTION HUB

HASSLE-FREE CONNECTIVITY

The B&O PLAY Connection Hub* allows you to hook up Beoplay S8 to almost any TV and audio sources, using optical or analogue cables.

No extra remotes are needed, as the Connection Hub learns the IR commands from your TV remote or any other remote.

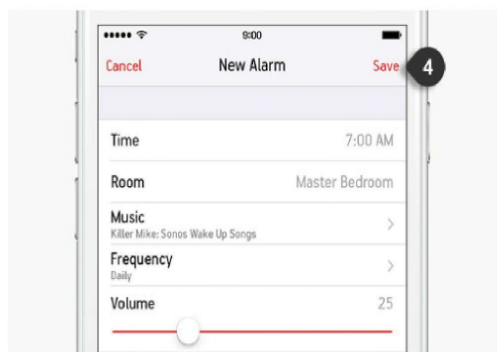
The Connection Hub handles up to 3 connections at a time, and automatically changes to the last audio source to play, so if you're listening to music, and the TV is turned on, the sound of the TV will take over. It's as easy as that!

B&O with Cast, 2016

The following **patent disclosure** includes disclosure and/or patent claims believed to be relevant, now or in the future, to line-in switching with Google Partner Speaker devices implementing the Google Cast SDK.

- Pat. No. 8,938,312

10. Zone Scenes (Alarms) [EXAMPLE “VERTICAL” FEATURE]



Sonos, Today

Add the alarm

1. Run Music Flow Player application.
 2. Tap [Settings] > [Alarm/Sleep Timer] > [Alarm].
 3. Tap [Add], Alarm setting screen appears.
 4. Set the alarm items such as time of day, day of week, speakers, alarm sound, alarm duration, shuffle, volume.
 5. Tap [Set]. Designated speaker plays the music at a set time.
- If the alarm sound is from the the playlist in the devices turned off, default alarm sound is played.

LG MusicFlow with Cast, 2016

The following **patent disclosure** includes disclosure and/or patent claims believed to be relevant, now or in the future, to implementing zone scenes, such as an Alarm, using Google Partner Speaker devices implementing the Google Cast SDK.

- Pat. No. 8,483,853

APPENDIX A

Index According to Example Google Product

Page	Example Google Product	Relevant Patents Identified
4	Chromecast Audio Dongle	<p><i>Issued Patents</i> 9,213,357; 9,189,011; 8,938,637; 8,370,678; 8,689,036; 9,348,354; 9,182,777; 9,288,596; 9,195,258; 9,207,905; 9,170,600; 9,213,356; 9,348,824; 8,930,005</p> <p><i>Allowed Applications</i> 14/558,944; 14/679,815; 14/041,989</p>
11	Google Cast Application	<p><i>Issued Patents</i> 9,164,532; 9,218,017; 8,588,949; 7,571,014; 8,930,005; 9,348,824</p> <p><i>Allowed Applications</i> 14/679,815</p>
17	Google Play Music Application	<p><i>Issued Patents</i> 8,588,949; 7,571,014; 9,348,824</p> <p><i>Allowed Applications</i> 14/520,566</p>
21	Google Cast SDK, Partner Speakers and Applications	<p><i>Issued Patents</i> 9,213,357; 9,189,011; 8,938,637; 8,370,678; 8,689,036; 9,348,354; 9,182,777; 9,288,596; 9,195,258; 9,207,905; 9,170,600; 9,213,356; 9,348,824; 9,164,532; 9,218,017</p> <p><i>Allowed Applications</i> 14/679,815; 14/520,566; 14/041,989</p> <p><i>Disclosures Pertaining to "Vertical" Features</i> 9,219,959; 9,202,509; 8,938,312; 9,130,771; 8,483,853; 9,363,255</p>

EXHIBIT B

To: Matthew Gubiotti[mgubiotti@google.com]

Cc: Tanya Moore[tanya.moore@sonos.com]; Paul Kafadar[paul.kafadar@sonos.com]; Chris Butts[chris.butts@sonos.com]

From: Willy Chen[O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=51BC14060C884322BEB988ABD07CE47B-WILLY CHEN]

Sent: Wed 1/31/2018 5:04:26 PM Eastern Standard Time

Subject: Re: Patent Discussion

Attachment: Sonos and Google Home (Max) - 2018.1.31.pdf

CONFIDENTIAL AND SUBJECT TO FRE 408

Hi Matt,

It was nice meeting you and Kevin today. Please see attached the pdf of the presentation we went through today. We're available if you have any questions or would like to discuss the slides further.

Please forward this on to Kevin for us (we don't have his email address).

Thanks,

Y. Willy Chen | Sonos, Inc. | 773.954.6339 | willy.chen@sonos.com

From: tanya.moore@sonos.com

When: 12:00 PM - 1:00 PM January 31, 2018

Subject: Patent Discussion

Location: <https://sonos.zoom.us/j/441325891>

Matt, please forward to your colleague who will be joining us. Thanks.

Hi there,

Tanya Moore is inviting you to a
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**Join from an H.323/SIP room
system**

SONOS

Sonos and Google

with Google Home Max analysis

January 31, 2018

1/31/18

Confidential and Subject to FRE 408

1

Agenda

- **Sonos and its Patent Portfolio**
- **Sonos and Google (2016-present)**
- **Sonos innovation relevant to Google Home, including Max**
- **Representative features relevant to all Google Home/Cast**
- **Representative features currently relevant to Max**
- **Next steps**

Sonos' Homegrown Portfolio

Sonos Patent Portfolio:

450+ U.S. Patents Issued or Allowed
1100+ WW Assets, **700+** US Assets
 ~3 new U.S. Patents/Week
 >**50%** Practiced

IEEE Patent Power 2017

2nd in "Electronics"

Top 20 in "All" Technologies



IEEE Patent Power 2017 - Electronics

Company by Pipeline Power

Company/Organization	Country of Headquarters	Pipeline Power
Apple Inc.	United States	14,285
Sonos Inc.	United States	2,235
LG Electronics Inc.	South Korea	1,960
GoPro Inc.	United States	1,692
iRobot Corp.	United States	1,221
Dolby Laboratories Inc.	United States	1,129
Sony Corp.	Japan	1,101
Canon Inc.	Japan	1,030

<https://spectrum.ieee.org/static/interactive-patent-power-2017>





**At least 50 Sonos patents across 15 patent families
are known to be relevant to the Google Home ecosystem today.**

Sonos patent subject matter relevant to Google Home:

Audio Content	Platform	Player	Control	Outside Household
Audio from controller	Group management	Antennae switching	Discover/Find content	Cloud queue
Audio from LAN device	Master selection	Audio calibration	Group management	Cross-service integration
Audio via WAN	Networking	Audio processing	Playback control	Retail and marketing
Line-in audio switch	Queue management	Industrial Design	Queue management	Social queues
	Setup	Fault tolerance	Setup	
	Stereo pair	Microphone switching	Social (Party mode)	
	Synchronized playback	Networking	User interface design	
	Voice assistant	Orientation-based audio	Volume control	
		Orientation check		
		Playback control		
		Power management		
		Queue management		

Selected Sonos patent subject matter:

Audio Content	Platform	Player	Control	Outside Household
Audio from controller	Group management	Antennae switching	Discover/Find content	Cloud queue
Audio from LAN device	Master selection	Audio calibration	Group management	Cross-service integration
Audio via WAN	Networking	Audio processing	Playback control	Retail and marketing
Line-in audio switch	Queue management	Industrial Design	Queue management	Social queues
	Setup	Fault tolerance	Setup	
	Stereo pair	Microphone switching	Social (Party mode)	
	Synchronized playback	Networking	User interface design	
	Voice assistant	Orientation-based audio	Volume control	
		Orientation check		
		Playback control		
		Power management		
		Queue management		

* Subject matter in bold became relevant with release of Google Home Max

Selected Sonos patents for discussion:

Audio Content	Platform	Player	Control	Outside Household
Audio via WAN	Group management	Audio calibration	Group management	
US9,727,302	US9,348,824	US9,219,460	US8,843,228	
	Stereo pair	Industrial Design	Volume control	
	US9,202,509	D768,602	US8,588,949	
	US9,219,959	D796,447		
	15/228,685 (Allowed)	Orientation-based audio		
	Voice assistant	US9,042,556		
	US9,826,306	US9,748,647		
	US9,820,039	Orientation check		
		US9,367,611		
		Playback control		
		US9,671,780		
		Power management		
		US9,252,721		

1/31/18

Confidential and Subject to FRE 408

13

US Patent No.: 8,843,228

SONOS

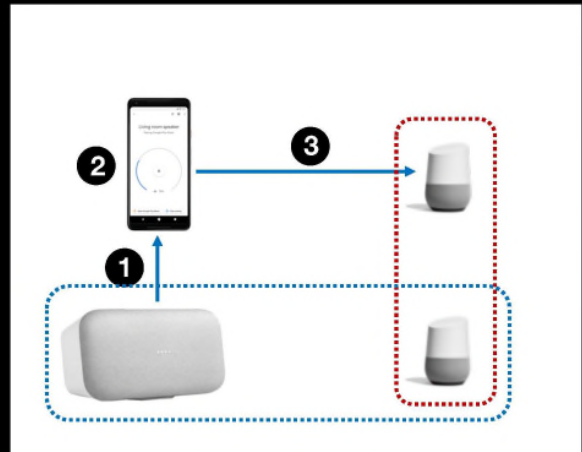
Title: Method and apparatus for updating zone configurations in a multi-zone system

Priority Date: 9/12/2006

Issue Date: 9/23/2014

This patent involves a controller device:

1. Receiving zone configuration characterizing one or more zone scenes.
2. Receiving an input to invoke one of the one or more zone scenes.
3. Based on the input, instructing two or more playback devices to form a group based on the invoked zone scene.



Method and apparatus for updating zone configurations in a multi-zone system

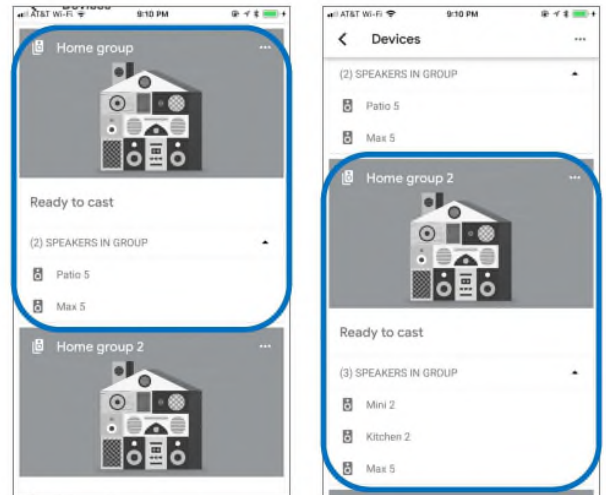
U.S. Patent No. 8,843,228; 9/12/2006

1. In a network comprising a plurality of independent playback devices, a method comprising:

receiving via the network by a controller device, a zone configuration from one of the plurality of independent playback devices, wherein the zone configuration is maintained at one or more of the plurality of independent playback devices, and wherein the zone configuration characterizes one or more zone scenes, each zone scene identifying a group configuration associated with two or more of the plurality of independent playback devices;

receiving, by the controller device, an input to invoke a zone scene of the one or more zone scenes; and

based on the input, instructing, by the controller device, two or more of the plurality of independent playback devices to be grouped in accordance with the invoked zone scene.



Zone scenes are populated on screen based on zone configuration information received from the playback device(s).

* see claim 1 of U.S. Patent 8,843,228 for complete claim language

Method and apparatus for updating zone configurations in a multi-zone system

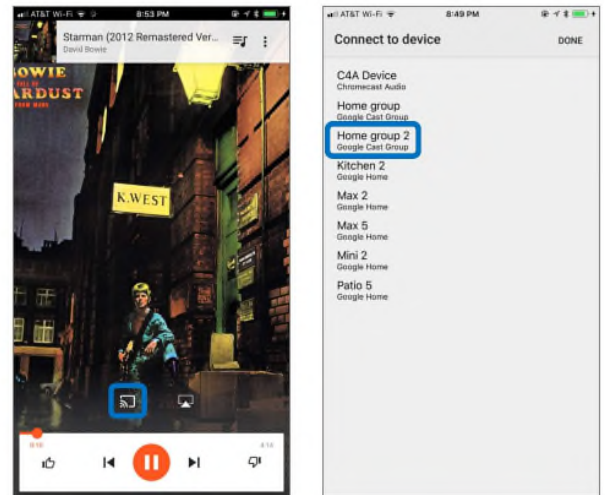
U.S. Patent No. 8,843,228; 9/12/2006

1. In a network comprising a plurality of independent playback devices, a method comprising:

receiving via the network by a controller device, a zone configuration from one of the plurality of independent playback devices, wherein the zone configuration is maintained at one or more of the plurality of independent playback devices, and wherein the zone configuration characterizes one or more zone scenes, each zone scene identifying a group configuration associated with two or more of the plurality of independent playback devices;

receiving, by the controller device, an input to invoke a zone scene of the one or more zone scenes; and

based on the input, instructing, by the controller device, two or more of the plurality of independent playback devices to be grouped in accordance with the invoked zone scene.



An input on the controller can invoke a zone scene of the one or more zone scenes.

* see claim 1 of U.S. Patent 8,843,228 for complete claim language

Method and apparatus for updating zone configurations in a multi-zone system

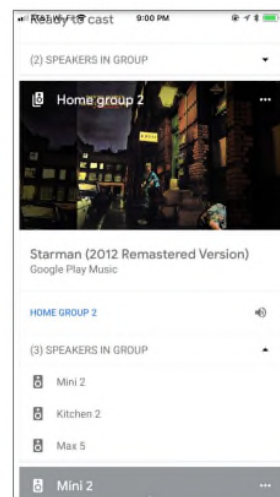
U.S. Patent No. 8,843,228; 9/12/2006

1. In a network comprising a plurality of independent playback devices, a method comprising:

receiving via the network by a controller device, a zone configuration from one of the plurality of independent playback devices, wherein the zone configuration is maintained at one or more of the plurality of independent playback devices, and wherein the zone configuration characterizes one or more zone scenes, each zone scene identifying a group configuration associated with two or more of the plurality of independent playback devices;

receiving, by the controller device, an input to invoke a zone scene of the one or more zone scenes; and

based on the input, instructing, by the controller device, two or more of the plurality of independent playback devices to be grouped in accordance with the invoked zone scene.



The playback devices in the invoked zone scene begin playing back audio as a group.

* see claim 1 of U.S. Patent 8,843,228 for complete claim language

Subject matter of interest but not touched upon today:


Audio Content	Platform	Player	Control	Outside Household
Audio from controller	Group management	Antennae switching	Discover/Find content	Cloud queue
Audio from LAN device	Master selection	Audio calibration	Group management	Cross-service integration
Audio via WAN	Networking	Audio processing	Playback control	Retail and marketing
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	Synchronized playback	Networking	User interface design	
	Voice assistant	Orientation-based audio	Volume control	
		Orientation check		
		Playback control		
		Power management		
		Queue management		

EXHIBIT C

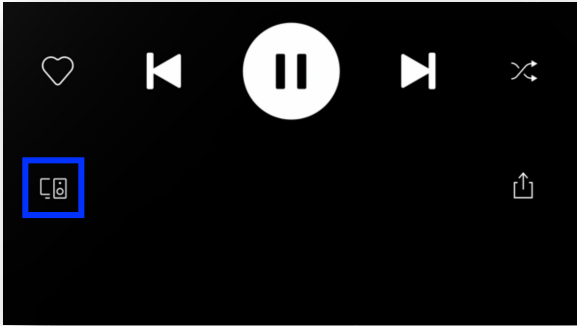
Sonos's Claim Chart
U.S. Patent No. 9,654,821

Claim: 1	Chromecast-Enabled Computing Devices
A method comprising:	Google's line of Chromecast-enabled audio players includes, <i>inter alia</i> , the Google Home Mini, the Google Home, the Google Home Max, the Google Home Hub, and the Chromecast dongles, and these Chromecast-enabled audio players are controlled by smartphones, tablets, and computers installed with the Google Home app, the Google Play Music app, and/or other Chromecast-enabled apps (where a computing device installed with at least one of these apps is referred to herein as a "Chromecast-enabled computing device"). Each of the foregoing Chromecast-enabled audio players comprises a "playback device" as recited in claim 1, and each Chromecast-enabled computing device comprises a "controller" as recited in claim 1.
causing, via a controller, a graphical interface to display a control interface including one or more transport controls to control playback by the controller;	<p>A Chromecast-enabled computing device is programmed with the capability to cause its graphical interface to display a control interface including one or more transport controls to control playback by the Chromecast-enabled computing device.</p> <p>For instance, a Chromecast-enabled computing device is programmed with the capability to display a control interface that includes one or more transport controls that, at times, control the Chromecast-enabled computing device's playback of audio content from a streaming music service (e.g., the Spotify music service). An example of this functionality is illustrated in the following screenshot:</p>

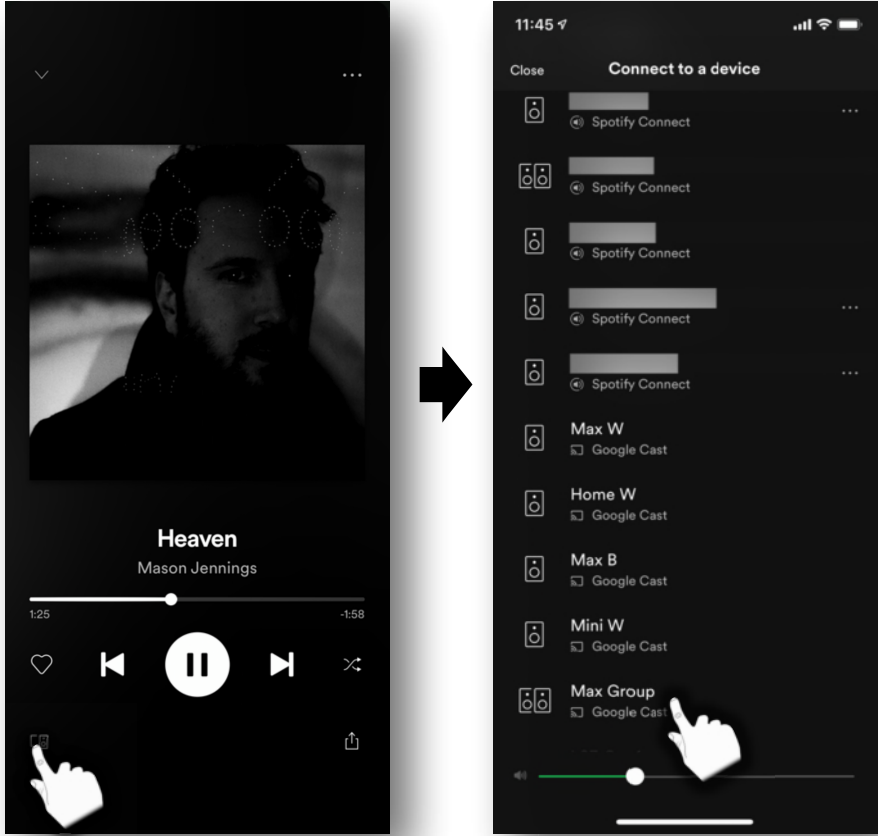
Sonos's Claim Chart
U.S. Patent No. 9,654,821

	
<p>after connecting to a local area network via a network interface, identifying a particular zone group of at least two playback devices connected to the local area network;</p>	<p>A Chromecast-enabled computing device is programmed with the capability to, after connecting to a local area network (LAN) via a network interface, identify a particular zone group of at least two Chromecast-enabled audio players connected to the LAN.</p> <p>For instance, a Chromecast-enabled computing device is programmed such that, after connecting to a LAN, the Chromecast-enabled computing device is configured to identify each Chromecast-enabled audio player connected to that same LAN as well as each group of such Chromecast-enabled audio players that has previously been created.</p>

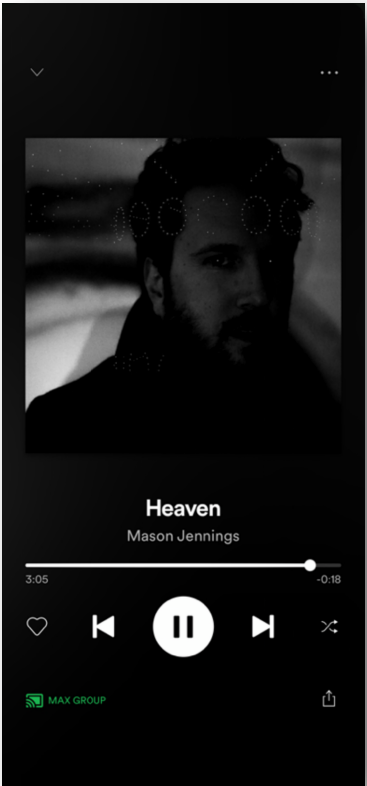
Sonos's Claim Chart
U.S. Patent No. 9,654,821

<p>causing, via the controller, the graphical interface to display a selectable option for transferring playback from the controller;</p>	<p>A Chromecast-enabled computing device is programmed with the capability to cause its graphical interface to display a selectable option for transferring playback from the Chromecast-enabled computing device.</p> <p>For instance, a Chromecast-enabled computing device is programmed with the capability to cause its graphical interface to display a selectable option for transferring playback of audio content from the Chromecast-enabled computing device to another device (e.g., a selectable “Connected State” indicator). This functionality is illustrated in the following screenshot:</p> 
<p>detecting, via the controller, a set of inputs to transfer playback from the controller to a particular zone group of at least two playback devices, wherein the set of inputs comprises: (i) a selection of the selectable option for transferring playback from the controller and (ii) a selection of the particular zone group connected to the local area network;</p>	<p>A Chromecast-enabled computing device is programmed with the capability to detect a set of inputs to transfer playback from the Chromecast-enabled computing device to a particular zone group of at least two Chromecast-enabled audio players, where the set of inputs comprises: (i) a selection of the selectable option for transferring playback from the Chromecast-enabled computing device and (ii) a selection of the particular zone group connected to the LAN.</p> <p>For instance, a Chromecast-enabled computing device is programmed with the capability to (i) detect a selection of a displayed selectable option for transferring playback of audio content from the Chromecast-enabled computing device to another device (e.g., a selectable “Connected State” indicator), which triggers the Chromecast-enabled computing device to display a list of available “devices” for transferring playback that includes each identified Chromecast-enabled audio player connected to the same LAN as well as each identified group of such Chromecast-enabled audio players, and then (ii) detect a selection of a particular group of Chromecast-enabled audio players connected to the same LAN. This functionality is illustrated in the following screenshots:</p>

Sonos's Claim Chart
U.S. Patent No. 9,654,821

	 <p><i>Cf.</i> https://support.google.com/googlehome/answer/7181830?hl=en (“Tap the Cast button . . . Tap the Google Home you’d like to cast to.”).</p>
<p>after detecting the set of inputs to transfer playback from the controller to the particular zone group, causing playback to be transferred from the</p>	<p>A Chromecast-enabled computing device is programmed with the capability to, after detecting the set of inputs to transfer playback from the Chromecast-enabled computing device to a particular zone group, cause playback to be transferred from the Chromecast-enabled computing device to the particular zone group.</p>

Sonos's Claim Chart
U.S. Patent No. 9,654,821

<p>controller to the particular zone group,</p>	<p>For instance, a Chromecast-enabled computing device is programmed such that, after detecting a set of inputs to transfer the device's playback of audio content from a streaming music service (e.g. Spotify) to a particular group of Chromecast-enabled audio players, the Chromecast-enabled computing device causes the playback of the audio content to be transferred to the particular group. Cf. https://support.google.com/googlehome/answer/7181830?hl=en; https://support.google.com/googlehome/answer/7559493?hl=en; https://support.google.com/googlehome/answer/7174267?hl=en. This functionality is illustrated in the following screenshot:</p> 
<p>wherein transferring playback from the controller</p>	<p>A Chromecast-enabled computing device is configured to cause playback to be transferred from the Chromecast-enabled computing device to a particular zone group by: (a) causing one or more first</p>

Sonos's Claim Chart
U.S. Patent No. 9,654,821

<p>to the particular zone group comprises: (a) causing one or more first cloud servers to add multimedia content to a local playback queue of the particular zone group; (b) causing playback at the controller to be stopped; and (c) modifying the one or more transport controls of the control interface to control playback by the particular zone group; and</p>	<p>cloud servers to add multimedia content to a local playback queue of the particular zone group, (b) causing playback at the Chromecast-enabled computing device to be stopped, and (c) modifying the one or more transport controls of the control interface to control playback by the particular zone group.</p> <p>For instance, a Chromecast-enabled computing device is programmed such that, after detecting a set of inputs to transfer the device's playback of audio content from a streaming music service (e.g. Spotify) to a particular group of Chromecast-enabled audio players, the Chromecast-enabled computing device functions to (i) cause one or more cloud servers associated with the streaming music service (e.g., the Spotify cloud servers) to add URIs for such audio content to a local playback queue of the particular group of Chromecast-enabled audio players, (ii) stop its own playback of audio content from the streaming music service, and (iii) modify the transport controls of its control interface such that those transport controls are configured to control playback by the particular group of Chromecast-enabled audio players rather than playback by the Chromecast-enabled computing device. Cf. https://support.google.com/googleplaymusic/answer/4415504?hl=en.</p>
<p>causing the particular zone group to play back the multimedia content, wherein the particular zone group playing back the multimedia content comprises at least one of the playback devices in the particular zone group retrieving the multimedia content from one or more second cloud servers of a streaming content service and playing back the retrieved multimedia content in synchrony with at least one other of the at least two playback devices in the particular zone group.</p>	<p>A Chromecast-enabled computing device is programmed with the capability to cause the particular zone group to play back the multimedia content, where the particular zone group playing back the multimedia content comprises at least one of the Chromecast-enabled audio players in the particular zone group retrieving the multimedia content from one or more second cloud servers of a streaming content service and playing back the retrieved multimedia content in synchrony with at least one other of the at least two Chromecast-enabled audio players in the particular zone group.</p> <p>For instance, a Chromecast-enabled computing device is programmed such that, after causing the device's playback to be transferred to a particular group of Chromecast-enabled audio players, the Chromecast-enabled computing device is capable of causing the particular group of Chromecast-enabled audio players to play back audio content from a streaming music service (e.g., the Spotify music service), which involves a "master" Chromecast-enabled audio player in the particular group retrieving the audio content from one or more cloud servers associated with the streaming music service (e.g., Spotify cloud servers) and playing back the retrieved audio content in synchrony with each "slave" Chromecast-enabled audio player in the particular group of Chromecast-enabled audio players. See, e.g., https://support.google.com/googlehome/answer/7174267?hl=en; https://support.google.com/googlehome/answer/7559493?hl=en.</p>

EXHIBIT D

To: Tim Kowalski[timkow@google.com]; Bradley Riel[bradriel@google.com]
Cc: Neha Kumar[neha.kumar@sonos.com]; Mark Triplett[mark.triplett@sonos.com]; Chris Butts[chris.butts@sonos.com]
From: Alaina Kwasizur[alaina.kwasizur@sonos.com]
Sent on behalf of: Alaina Kwasizur <alaina.kwasizur@sonos.com>
Sent: Thur 6/13/2019 9:15:23 AM Eastern Standard Time
Subject: Follow up from our meeting
Attachment: 2019.06.10 Sonos-Google Term Sheet.docx
Attachment: Sonos and Google Base Deck [SHARED AND DISTRIBUTED].pdf
Attachment: 2019.06.10 Sonos-Google Business collaboration ideas.docx

Hey Tim and Brad,
Thanks for the time Tuesday. Attached please find a copy of the slides that were presented, the term sheet we discussed, and a list of some initial ideas (not meant to be exhaustive) around potential business engagements to partially offset the licensing royalties.
We'd like to get the next meeting scheduled. I know you mentioned that Gisela is out until Monday, but we look forward to hearing back from you early next week on some possible dates/times that could work on the Google side.
Best,
Alaina

SONOS

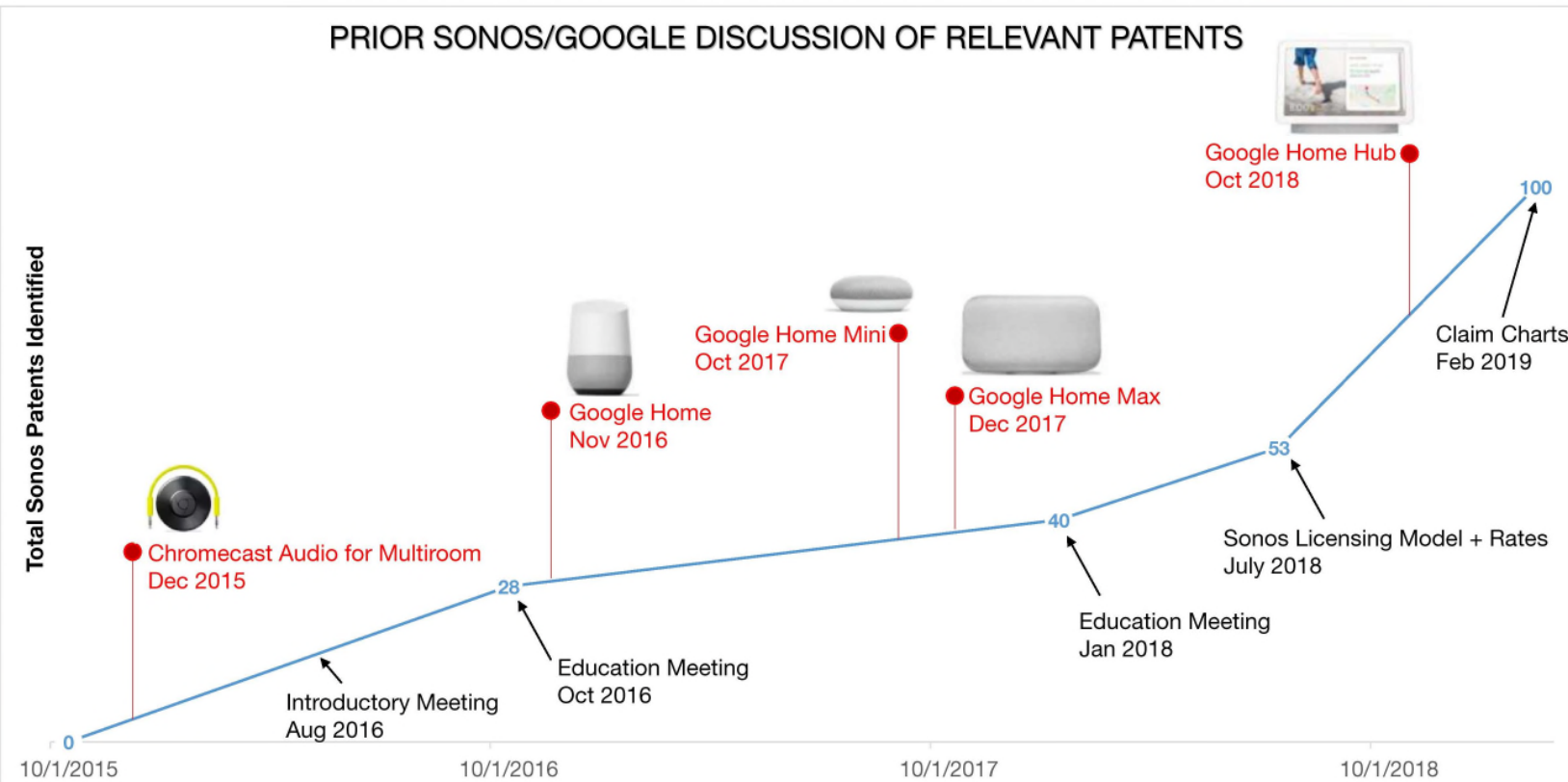


Sonos-Google IP License Discussion June 11, 2019

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PRIOR SONOS/GOOGLE DISCUSSION OF RELEVANT PATENTS



Confidential and Subject to FRE 408

3

Google's Use of Sonos IP



Google Home



Google Home Mini



Google Home



Google Home Max



Nest Hub



Nest Hub Max



chromecast



Chromecast Audio



Chromecast



Chromecast Ultra

Chromecast built-in

VIZIO

SONY

LG

PHILIPS

HANTH

Brookstone

SAMSUNG

ONKYO

BOSCH

PYLE

harman / kardon

SAMSUNG

SAMSUNG

GRUNDIG

OPOLK

BANG & OLUFSEN

Integra.

Pioneer

RIVA WAND

grace digital

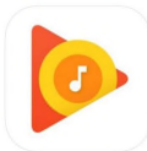
NETON

PYLE

TOSHIBA

SAMSUNG

GoogleApps



Google Pixel



Pixel 3



Pixel 3a

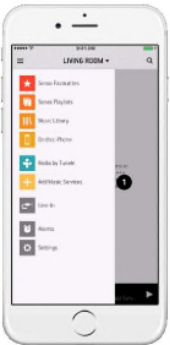


Pixel Slate

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Full Portfolio – The Taxonomy

Control (26%)
Controlling an
Audio System



Platform (38%)
Getting Players
and Controllers to
Work Together



Audio Content (5%)
Accessing Audio
Within and Outside
the Household



Player (23%)
Optimizing Player
Setup and
Performance



Sonos Beyond (8%)
Innovation Outside of
the Household Sound
Platform



634 Total U.S. Patents
375 Pending U.S. Patent Applications

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5

Licensing Model – Commercially Relevant Features

a. PLAYBACK DEVICE Feature Characteristics	Feature Descriptions
(1) Connected Playback Device Setup	(i) Player Setup & (ii) Streaming Service Setup
(2) Wi-Fi Streaming	(i) LAN/local source & (ii) Remote source
(3) Support for a streaming service	(i) Register a single service with a playback device & (ii) Cloud queue
(4) Support for 2+ streaming services	(i) Switching between music services & (ii) Universal search
(5) Line-in	(i) Physical line-in source switching & (ii) Virtual line-in (e.g., Bluetooth) source switching
(6) Line-out	Audio output port
(7) Bluetooth	(i) Setup & (ii) Real-time streaming
(8) Control Interface (SW)	(i) Guest Access, (ii) Native Control, & (iii) Direct control
(9) Control Interface (HW)	Hardware control interface
(10) Power and Power Management	Power save technology
(11) Fault Detection Recovery	Fault detection and recovery (e.g., physical and playback)
(12) Feature Updates (SW)	(i) Firmware/configuration & (ii) App store

b. VOICE ASSISTANT Feature Characteristics	Feature Descriptions
(1) Smart Assistant (SW)	(i) Machine Learning & (ii) Search Expertise
(2) Voice Detection	(i) Mic array, (ii) Beamforming (SW), (iii) Wake-word engine (SW), & (iv) Voice capture processing

c. MULTI DEVICE Feature Characteristics	Feature Descriptions
(1) Multi-Device Playback Control	(i) Group content/playback control, (ii) Group formation, (iii) Group volume, (iv) Zone Scenes, (v) Group navigation and maintenance, (vi) Source switching, & (vii) Multiple controllers
(2) Multi-Device Playback (SW)	(i) Synchronized playback & (ii) audio distribution
(3) Multi-Device Voice	(i) Multi-device output & (ii) Multi-device input, including arbitration
(4) Smart home integration (SW)	(i) Output/action devices, (ii) IOT scenes, & (iii) educational and entertainment functions
(5) Multi-Device networking	(i) Ad hoc/STP configurations (SW), (ii) Directing routing/comm. From GC to GM (SW), (iii) Fault tolerance, (iv) Designating GC, (v) Changing GC, and (vi) Setup

d. PREMIUM SOUND Feature Characteristics	Feature Descriptions
(1) Orientation	Sound shaping based on orientation
(2) Bonded Zones	(i) Stereo pair & (ii) Bonded players (SUB; HTS.2, etc.)
(3) Custom Transducers	(i) Woofers & (ii) Tweeters
(4) Calibration	(i) Calibration using built-in mics, (ii) calibration using external mics, & (iii) audio processing algorithm calculation
(5) Lossless Streaming	(i) Processing power and networking and (ii) compatible DSP
(6) Sound field control	(i) Purpose designed transducers, (ii) audio signal processing (SW), & (iii) acoustic baffle
(7) Custom amplifiers	Custom amplifier audio processing
(8) Enclosure	Speaker grill

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27 Total	Max (17 of 25)	Home, Hub, Mini (9 of 16)	Chromecast (9 of 15)
Playback Device (Standalone)			
Playback Device Setup	setup	setup	setup
Wi-Fi Streaming			
Support for only one streaming service	cloud queue	cloud queue	cloud queue
Support for multiple streaming services	service switch	service switch	service switch
Line-in	direct (Bluetooth switch)	direct (Bluetooth switch)	
Line-out			
Bluetooth			
Control Interface (SW)	guest access direct control	guest access direct control	guest access direct control
Control Interface (HW)	control based on orientation		
Power and Power Management	power save		
Fault Detection/Recovery	fault based on orientation		
Features Update (SW)			
Voice Assistant Device			
Smart Assistant			
Voice Detection	mic based on orientation		
Multi-device Platform			
Multi-device Playback Control (SW)	grouping/synchronization group volume zone scenes direct control to group group ID	grouping/synchronization group volume zone scenes direct control to group group ID	grouping/synchronization group volume zone scenes direct control to group group ID
Multi-device Playback (SW)	grouping/synchronization	grouping/synchronization	grouping/synchronization
Multi-device Voice	default device meta data channel	default device meta data channel	default device meta data channel
Smart-home Integration			
Multi-device Networking	GC selection GC switching	GC selection GC switching	GC selection GC switching
Premium Sound			
Orientation	sound based on orientation		
Bonded Zones	bonded pair		
Custom Transducers			
Calibration	self calibration		
Lossless Streaming			
Sound Field Control	multi-channel sound field		
Custom Amplifiers			
Enclosure			

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Sonos's 100 Claim Charts

Feature Category	Family Name	Total Patents
Multi-Device Platform	SYNCHRONIZING OPERATIONS AMONG A PLURALITY OF INDEPENDENTLY CLOCKED DIGITAL DATA PROCESSING DEVICES	41
Connected Playback Device	CONTROLLING AMPLIFIERS [POWER SAVE]	2
Multi-Device Platform	CONTROLLING MULTIMEDIA PLAYERS IN A MULTIZONE SYSTEM [GROUP VOLUME]	2
Connected Playback Device	PLAYBACK DEVICE CONNECTION [SETUP]	2
Multi-Device Platform	CONTROLLING AND MANIPULATING GROUPINGS IN A MULTI-ZONE MEDIA SYSTEM [ZONE SCENES]	5
Premium Sound	Multi-Channel Pairing in a Media System	6
Connected Playback Device	SMART LINE-IN PROCESSING	2
Connected Playback Device	Leaving Group Based on Message From Audio Source	2
Premium Sound	SHAPING SOUND RESPONSIVE TO SPEAKER ORIENTATION	2
Connected Playback Device	NETWORKED MUSIC PLAYBACK [DIRECT CONTROL - 2011]	4
Connected Playback Device	ACOUSTIC SIGNATURES [GUEST ACCESS]	3
Connected Playback Device	PLAYBACK QUEUE CONTROL VIA A PLAYLIST [DIRECT CONTROL - 2013]	6
Connected Playback Device	DETECTING IMPROPER POSITION OF A PLAYBACK DEVICE	1
Premium Sound	AUDIO SETTINGS BASED ON ENVIRONMENT	3
Connected Playback Device	CLOUD QUEUE	8
Multi-Device Platform	DEVICE GROUP IDENTIFICATION	1
Premium Sound	MULTI-CHANNEL PLAYBACK OF AUDIO CONTENT	1
Multi-Device Platform	GROUP COORDINATOR SELECTION BASED ON NETWORK PERFORMANCE METRICS	3
Voice Assistant Device	Orientation-Based Playback Device Microphone Selection	1
Connected Playback Device	Orientation-Based Touch Control	1
Multi-Device Platform	Metadata exchange involving a networked playback system and a networked microphone System	1
Multi-Device Platform	DEFAULT PLAYBACK DEVICE	3

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Sonos's 100 Claim Charts

Feature Category	Family Name	Total Patents
Multi-Device Platform	SYNCHRONIZING OPERATIONS AMONG A PLURALITY OF INDEPENDENTLY CLOCKED DIGITAL DATA PROCESSING DEVICES	41
Connected Playback Device	CONTROLLING AMPLIFIERS [POWER SAVE]	2
Multi-Device Platform	CONTROLLING MULTIMEDIA PLAYERS IN A MULTIZONE SYSTEM [GROUP VOLUME]	2
Connected Playback Device	PLAYBACK DEVICE CONNECTION [SETUP]	2
Multi-Device Platform	CONTROLLING AND MANIPULATING GROUPINGS IN A MULTI-ZONE MEDIA SYSTEM [ZONE SCENES]	5
Premium Sound	Multi-Channel Pairing in a Media System	6
Connected Playback Device	SMART LINE-IN PROCESSING	2
Connected Playback Device	Leaving Group Based on Message From Audio Source	2
Premium Sound	SHAPING SOUND RESPONSIVE TO SPEAKER ORIENTATION	2
Connected Playback Device	NETWORKED MUSIC PLAYBACK [DIRECT CONTROL - 2011]	4
Connected Playback Device	ACOUSTIC SIGNATURES [GUEST ACCESS]	3
Connected Playback Device	PLAYBACK QUEUE CONTROL VIA A PLAYLIST [DIRECT CONTROL - 2013]	6
Connected Playback Device	DETECTING IMPROPER POSITION OF A PLAYBACK DEVICE	1
Premium Sound	AUDIO SETTINGS BASED ON ENVIRONMENT	3
Connected Playback Device	CLOUD QUEUE	8
Multi-Device Platform	DEVICE GROUP IDENTIFICATION	1
Premium Sound	MULTI-CHANNEL PLAYBACK OF AUDIO CONTENT	1
Multi-Device Platform	GROUP COORDINATOR SELECTION BASED ON NETWORK PERFORMANCE METRICS	3
Voice Assistant Device	Orientation-Based Playback Device Microphone Selection	1
Connected Playback Device	Orientation-Based Touch Control	1
Multi-Device Platform	Metadata exchange involving a networked playback system and a networked microphone System	1
Multi-Device Platform	DEFAULT PLAYBACK DEVICE	3

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	Max (17 of 25)	Home, Hub, Mini (9 of 16)	Chromecast (9 of 15)
Playback Device (Standalone)			
Playback Device Setup	setup	Setup	setup
Wi-Fi Streaming			
Support for only one streaming service	cloud queue	cloud queue	cloud queue
Support for multiple streaming services	service switch	service switch	service switch
Line-in	direct (Bluetooth switch)	direct (Bluetooth switch)	
Line-out			
Bluetooth			
Control Interface (SW)	guest access direct control	guest access direct control	guest access direct control
Control Interface (HW)	control based on orientation		
Power and Power Management	power save		
Fault Detection/Recovery	fault based on orientation		
Features Update (SW)			
Voice Assistant Device			
Smart Assistant			
Voice Detection	mic based on orientation		
Multi-device Platform			
Multi-device Playback Control (SW)	grouping/synchronization group volume zone scenes direct control to group group ID	grouping/synchronization group volume zone scenes direct control to group group ID	grouping/synchronization group volume zone scenes direct control to group group ID
Multi-device Playback (SW)	grouping/synchronization	grouping/synchronization	grouping/synchronization
Multi-device Voice	default device meta data channel	default device meta data channel	default device meta data channel
Smart-home Integration			
Multi-device Networking	GC selection GC switching	GC selection GC switching	GC selection GC switching
Premium Sound			
Orientation	sound based on orientation		
Bonded Zones	bonded pair		
Custom Transducers			
Calibration	self calibration		
Lossless Streaming			
Sound Field Control	multi-channel sound field		
Custom Amplifiers			
Enclosure			

Device Setup

2 patents
+pending

Control Interface (Direct Control)

10 patents
+pending

Multi-Device Playback (Synchronization)

10 patents
+pending

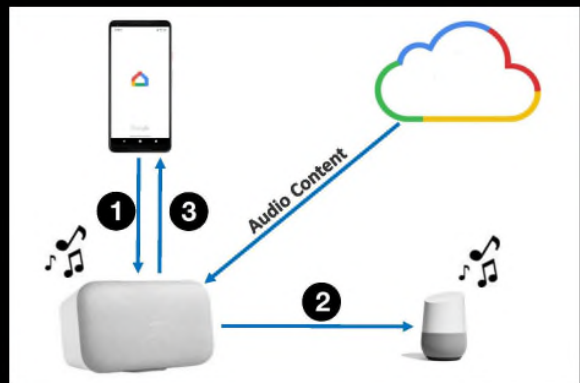
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US Patent No.: 9,195,258**Litigated****SONOS****Title: System and method for synchronizing operations among a plurality of independently clocked digital data processing devices****Priority Date: 4/1/2004****Issue Date: 11/24/2015**

This patent involves a first independently clocked zone player capable of:

1. Receiving, from a controller, a direction to enter into a synchrony group.
2. Entering into a synchrony group, where the zone players in the group are configured to playback audio in sync based at least on (i) audio content, (ii) playback timing information corresponding to the audio, and (iii) clock time information of the first zone player.
3. Transmitting status information to a controller that indicates a status of the synchrony group.

Multi-Device Playback (Synchronization)**Create and manage speaker groups**

Group any combination of Google Home devices, Chromecast devices, and speakers with Chromecast built-in together for synchronous music throughout the home. Your favorite music and audio from Chromecast-enabled apps are instantly available to stream.

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US Patent No.: 9,960,969

SONOS

Title: Playback Device Connection

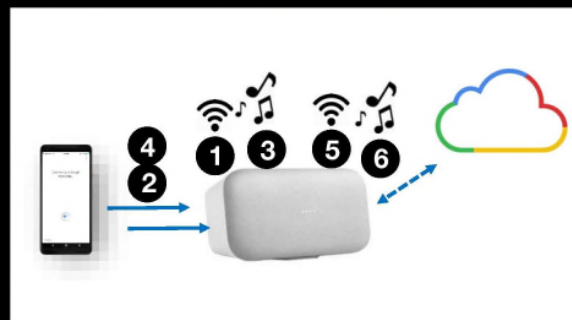
Priority Date: 6/5/2004

Issue Date: 5/1/2018

This patent involves a playback device capable of:

1. Broadcasting a message indicating a network name of a first network.
2. Receiving a message indicating a selection of the first network.
3. Responsively outputting audio.
4. Receiving a message indicating parameters of a second network.
5. Joining the second network.
6. Receiving audio for playback over the second network and outputting the audio

Device Setup



Set up your Google Home speaker or Google Nest display

The Google Home app will walk you through the steps to set up your Google Home speaker or Google Nest display.

US Patent No.: 9,735,978

SONOS

Title: Playback queue control via a playlist on a mobile device

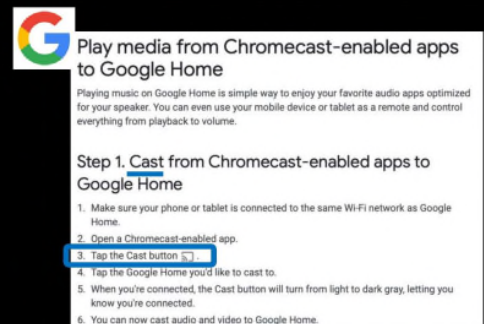
Priority Date: 5/29/2013

Issue Date: 8/15/2017

This patent involves a controller device capable of:

1. Displaying an indication that a selection of a zone will cause actions associated with a playlist to be extended to the zone in a connected state.
2. Establishing the connected state between the controller device and the zone.
3. Dynamically updating a playback queue of the zone in response to modifications of the playlist.

Control Interface (Direct Control)



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Custom Amplifiers			
Enclosure			

Cloud Queue

Zone Scenes
(Grouping)

Group Volume Control

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US Patent No.: 8,588,949

Litigated

Re-Examined

SONOS

Title: Method and apparatus for adjusting volume levels in a multi-zone system

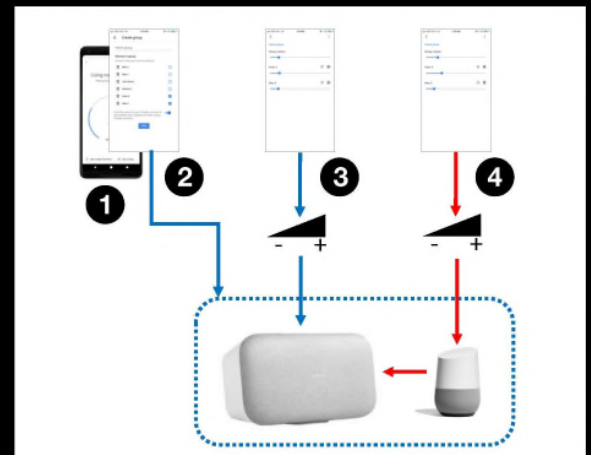
Priority Date: 6/5/2004

Issue Date: 11/19/2013; 11/5/2015

This patent involves a controller device capable of:

1. Providing an interface for a player group.
2. Accepting input to facilitate forming a player group.
3. Accepting input to adjust a volume of an individual player in the player group.
4. Accepting input to adjust a volume of the player group.

Multi-Device Playback Control



How to change the volume of an audio group

When casting to a group, there are two ways to change the volume:

1. Changing the group volume. This action will change the volume of all speakers within the group.
2. Changing a single speaker's volume when it's part of a group. This action will only change that individual speaker.

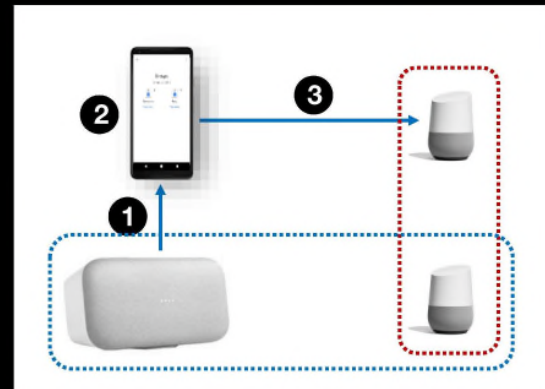
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US Patent No.: 8,843,228**SONOS****Title: Method and apparatus for updating zone configurations in a multi-zone system****Priority Date: 9/12/2006****Issue Date: 9/23/2014**

This patent involves a controller device capable of:

1. Receiving from a playback device a zone configuration characterizing one or more zone scenes.
2. Receiving an input to invoke one of the one or more zone scenes.
3. Based on the input, instructing two or more playback devices to form a group based on the invoked zone scene.

Multi-Device Playback Control**Step 2. Control speaker groups**

Note: Changing the volume of an individual speaker in a group will change the group's volume.

Using your voice

From the Google Home app

1. Open the Google Home app.
2. Make sure your mobile device or tablet is connected to the same Wi-Fi as your Google Home device.
3. From Home, tap the speaker group you want to control.

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US Patent No.: 9,654,459

SONOS

Title: Cloud Queue Synchronization Protocol

Priority Date: 6/4/2014

Issue Date: 5/16/2017

This patent involves a playback device capable of:

1. While playing an audio track from a local queue, sending a request for an indication of audio tracks identified in a cloud queue and an indication of the audio track currently being played by the playback device.
2. Receiving an indication of two or more audio tracks from the cloud queue.
3. Incorporating an indication of at least one of the received audio tracks into the local queue.



Queueing

Overview

Queueing allows partner applications to better integrate with Cast by providing the following features:

- Support of Google's and partner's cloud queue implementation so externally stored and created queue can be directly loaded into Cast devices.
- Mechanisms that allows pagination of items in the queue rather than loading everything at once, solving our Receiver v2 message size limit issue.
- Support for new messaging such as going to the next item, the previous item, fetching a window of items, as well as getting media information related to a set of queue items.
- Better integration with the Cast eco-system such as Google Home and Google Assistant through new queueing data.
- An easy-to-use QueueManager API that allows insertion, removal, and update of queue items.

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